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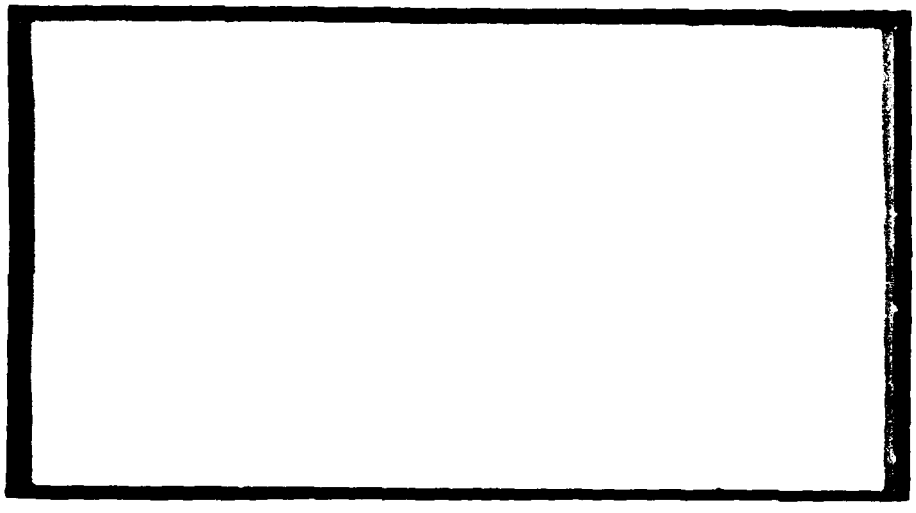

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INDIVIDUAL DIFFERENCES, STRUCTURAL CHARACTERISTICS OF ORGANIZATIONAL POSITIONS, AND PLANT EFFECTS ON RESPONSES[1]

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The generalizability across two plants of the same organization of the nature, form, and strength of the relationships of objective profiles of employees' positions in the organizational structure and their demographic background to evaluations and perceptions of the work environment was examined. Four separate cross-plant discriminant function analyses were conducted. In each analysis, groups were identified jointly by their plant membership and demographic or structural characteristic. Large between-plant differences on job attitudes were found. Organizational structure accounted for more variance

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in attitudinal responses, but individual differences showed greater trans-plant consistency.

Abstract

The generalizability across two printing plants of the same organization of the nature, form, and strength of the relationships of objective profiles of employees' positions in the organizational structure and their demographic background to evaluations and perceptions of the work environment was investigated. Four separate cross-plant discriminant function analyses were performed. In each analysis, groups were defined jointly by their plant membership and demographic (age, educational level) or structural characteristic (functional specialty, job level). Large between-plant differences on job attitudes were found. In addition, organizational structure variables accounted for more variation in attitudinal responses, but individual difference characteristics displayed greater trans-plant consistency. Job satisfaction variables contributed most to differentiation among groups. Perceptual and motivational measures were less relevant for describing group differences. Further, the discriminant functions which separated groups by structural or demographic dimensions were qualitatively different in each case. Whether the relationship between individual differences and job responses is monotonic or non-monotonic depended upon the type of dependent measure examined.

In a recent review of the literature on the effects of structural properties of organizations on job attitudes and job behaviors, Berger and Cummings (1975) reiterated a problem noted ten years earlier by Porter and Lawler (1965): the failure of researchers to recognize or attend to the problem of the interrelationships among structural variables, and often, their interactive effects on organizational members' attitudes and behaviors. Moreover, the absence of investigations of construct validities of operational measures of organizational structural properties limit the confidence that can be placed on any given interpretation of their effects on responses of workers. The inability of organizational scientists to delineate the effects of structural variables through experimental procedures and their disinterest in employing longitudinal research designs further compounds the problem of interpretability. Research, in the decade since Porter and Lawler's (1965) review, has not significantly advanced our understanding of the phenomena of the effects of structural variables on attitudes and behavior. Effort has not been directed toward controlling the sources which render empirical findings ambiguous: the determination of <u>which</u> structural variables are responsible for which effects and development of valid empirical representation of conceptual definitions of structure (i.e., threats to internal and construct validity; Cook and Campbell, 1976).

Problems also arise from the application of univariate and inadequate multivariate models to organizational phenomena. The method of choice to test correlated hypotheses with correlated measures in organizational research has been multiple univariate statistical tests. Analysis of the Porter Need Satisfaction Questionnaire (PNSQ) to study need satisfaction

and fulfillment across several levels of organizations typifies the standard methodology in the literature (Berger & Cummings, 1975). Relationships among structural variables and need satisfaction revealed in repeated univariate analyses may be inflated and overestimated. Thus, added to the skepticism of the meaning of effects of structural variables is diminished confidence in the stability of their empirical relationships with workers' responses.

A related problem is application of inadequate multivariate models. In terms of the general linear regression model (which underlies most of the statistical techniques employed), "when a relevant explanatory variable which is correlated with the included explanatory variables is omitted, the estimated effects of the included explanatory variables will be biased and inconsistent" (Berger and Cummings, 1975, p.59).

Finally, Berger & Cummings (1975) conclude empirical research has continued to restrict itself to a limited set of structural variables (frequently job level) and attitudes (job satisfaction as the popular dependent variable). Research on behavioral differences associated with sturctural variation remain rare.

The multifaceted nature of the phenomena requires a multivariate research design and statistical analysis, Berger and Cummings recommend. Most of us seem to realize that pretzel-shaped universes demand pretzel-shaped hypotheses. What is less understood is that pretzel-shaped hypotheses require pretzel-shaped analyses. Clearly, a multivariate methodology can advance and must complement a multifaceted conceptualization.

Moreover, the problem of controlling empirically-related structural variables necessitates the greater statistical control and refinement represented by multivariate statistical techniques. These techniques were

designed to handle precisely the problem of multiple comparisons upon correlated dependent variables. In addition, a multivariate approach allows for the estimation of the interactive and nonlinear effects as well as the magnitude of the effects (main and joint) of nonorthogonal structural variables.

Demographic characteristics have also demonstrated empirical associations to job responses (Herzberg, Mausner, Peterson, and Capwell, 1957; Smith, Kendall, & Hulin, 1969). Studies of the effects of organizational characteristics have traditionally excluded the personal characteristics of employees (Porter and Lawler, 1965; Berger and Cummings, 1975). Yet few researchers would deny the validity of the Lewinian formulation that behavior is a product of the person and his environment. Like many worthy principles, however, Lewin's has been honored in speech and neglected in deed. Simultaneous investigations of both sets of variables seem crucial since the selection, placement, and promotion of individuals to positions in organizations may bear some association to their personal characteristics, and covariation between characteristics of positions and individual differences may be created (e.g. age and job level). Further, comparisons of the relative effectiveness of individual and structural characteristics in explaining variation in responses are possible by such studies.

The research efforts of Herman, Hulin and their associates (Herman & Hulin, 1972; Herman, Dunham, & Hulin, 1975; Herman, Hulin, and Dunham, 1976; Newman, 1975) have been examples of the multivariate approach suggested by Berger and Cummings. Unlike past research, broader sets of structural variables have been investigated in conjunction with personal characteristics in multivariate framework. The attitudes studied have been

more comprehensive than has been true of past research. Broader samples of evaluations and perceptions employees have of their work environment have been measured. Many attitudinal measures included in the research program carry important theoretical implications and possess high reliability and validity (the five JDI scales and the two scales from the LBDQ). Measures with unknown validity and psychometric properties were included only as part of validity studies of these measures.

Attention of the research program has been directed toward explicating workers' evaluations and descriptions of several characteristics of their work environment. Several reasons exist for this interest in job attitudes. Job attitudes are related to organizationally relevant behaviors such as turnover and absenteeism (Brayfield & Crockett, 1955; Porter & Steers, 1973; Vroom, 1964). They are also more consistently and highly related to structural variables than performance. Porter and Lawler (1965) suggest this is in part due to the more complex determinants of performance than of job attitudes. Performance is also likely to be dependent to a great extent on technology. More adequate measurement of job attitudes is possible. Lastly, job attitudes are important in their own right.

The results of the first study in the research program (Herman and Hulin, 1972) demonstrated that objective profiles of demographic and structural characteristics were related to employees' evaluative and descriptive responses to their work environment. In addition, environmental characteristics were demonstrated to be more effective in explaining variation in organizational members' affect toward and beliefs about their work setting than personal characteristics. The multivariate analogue of omega-squared (Hays, 1963) for separate discriminant analysis indicated

that each characteristic of the work environment (functional specialty, department, and hierarchical level) was more powerful in accounting for variance in job attitudes than characteristics of employee's personal backgrounds (age, educational level, and tenure).

These relative explanatory powers were established more conclusively by using canonical and part-canonical regression techniques in a follow-up study which allowed the removal of variance in response measures due to one set of characteristics before examining the influence of a different set of antecedent variables. Structural variables bore a stronger relationship to job attitudes than demographic variables (Herman, Dunham, & Hulin, 1975) and accounted for a greater amount of unique variance. Twenty-two percent of the total response variance was accounted for by the combined set of structural and demographic variables. Demographic variables alone accounted for 9% of the response variance. Structural variables alone accounted for 19% of the variance in responses. Controlling for covariation among demographic and structural variables, structural indices of positions accounted for 13% of the variation in responses while demographic indices accounted for only 3% unique variance. The stability of the results of these studies has been documented across two different plants of the same organization and across two organizations (Herman, Hulin, & Dunham, 1976).

The evidence so far strongly suggests that if psychological responses are accounted for by objective indices describing their positions in the organizational structure, then employees in similar organizational positions must be perceiving and evaluating aspects of their work environment similarly. If responses are accounted for by objective indices describing employee personal backgrounds, then employees with similar demographic characteristics

must be experiencing their work environment in a similar way. Variation in psychological responses is only partially accounted for by confounding between objective profiles of employees' position in the organizational structure and their demographic backgrounds. Environmental and personal characteristics also seem to exert control over different portions of the response variance. The perceptions and evaluations of the work setting influenced by these two sets of variables appear to be qualitatively distinct (Herman, Dunham, & Hulin, 1975; Newman, 1975).

Generalizability of the substantive aspects of these findings across organizations is the next step in our research program. Data have been collected from two geographically separate plants of the same organization. Structural features (formal structure, work rules, system procedures, etc.) are similar across divisions. The two divisions differ, however, in the size and age of the facilities, their pay system, and the age and educational level of their work force. Neither plant is unionized. Thus the plants differ on total organizational structural dimensions (different technological scope and range, different horizontal and vertical complexity) as well as the demographic composition of their respective personnel, although both are engaged in common business activities (printing operations).

In this study, subjects will be classified objectively and independently by the plant in which they work, their demographic background, and by structural characteristics of their organizational positions. Discriminant analyses will be carried out to study attitudinal similarity of groups defined by suborganizational structural characteristics of positions and demographic characteristics variables. The main focus will

be on cross-plant comparisons as structural characteristics of positions and demographic characteristics of incumbents are varied. This study will examine the extent to which employees occupying similar positions in different organizations share similar feelings and perceptions of their work environment. Concurrently, the extent to which relationships between demographic characteristics and psychological responses display trans-situational consistency will be assessed. Thus, the between-plant similarity of the network of multivariate relationships among these three sets of variables will be the predominant interest of this study.

If groups defined by a particular sub-plant structural variable cluster together in discriminant space, then employee attitudes and perceptions perhaps can be attributed to common work experiences indexed by that sub-plant structural classification. If groups cluster together by plant, then broader situational characteristics as plant setting may be an appropriate explanation. It is also possible that groups will cluster by plant on some discriminant dimensions and by structural variables on others. Such findings, if they occur, would suggest that variation in attitudes are related to structural differences despite plant differences, and that despite structural differences, attitudes are also a function of plant differences. Each possible clustering will suggest different hypotheses to be explored in attempts to provide descriptions and meanings of relationships.

Multiple group discriminant function analyses will also be done for individual difference variables assessed by demographic profile. The extent to which the form and strength of individual differences' relationship with psychological responses are moderated by plant differences will be examined.

Method

Data were collected from employees in two midwestern plants of a non-unionized printing company. Plant C, which was over 45 years old, employed approximately 1500 people. Plant D was only two years old at the time of the study and employed approximately 430 people. The work force of plant D was younger and more highly educated than employees in plant C. Refer to Tables 1, 3, 6, 9, and 12 to obtain distributions of the demographic characteristics and structural positions of the samples from the two plants.

The employees who were asked to participate in the study were informed initially by a letter from the respective plant managers stressing the voluntary nature of the participation and anonymity of the data. The workers were urged by the plant managers to take part in the survey. About one week before the survey, a letter on university letterhead stationery was sent over the signatures of two of the investigators. This second letter also emphasized the voluntary nature of the survey and the anonymity of the responses. In addition, the employees were informed that this particular study was one of a series of studies being done under the sponsorship of a federal agency.

All questionnaires were anonymous. The voluntary participation rate in plant D was 98%, while in plant C it was 86%. Thirty minutes were required to administer the questionnaire in small groups of 10 to 25 people. No statistically significant administrator differences in the amount of missing data or level of general satisfaction measured by the Faces Scale (Kunin, 1955) were found.

The first section of the questionnaire assessed the demographic characteristics of the employees and identified their position in the

organization. Such data provided a means of indexing objective characteristics of the employees' organizational position (work group, department, etc.) without loss of respondent anonymity. All employees were identified by age, sex, marital status, family size, number of family wage-earners, and educational level. Race was not a relevant demographic characteristic in this organizational context since all workers surveyed in both plants were Caucasians. An employee's position in the organization was described by job level, shift, and department. Since the latter two indices were qualitative, they were transformed into sets of "dummy" coded variables prior to analysis (see Cohen & Cohen, 1975, for a description of this procedure). Several variables which describe the kind and extent of person-organization contact were included in the set of organizational structure characteristics: tenure in a particular plant and the company, and participation in the apprenticeship program.

The second section of the questionnaire was designed to measure employee reactions to a number of aspects of their work environment. Distinctions among such conceptually different variables as attitudes, perceptions, motives, or needs which are assessed by similar methods and share considerable amount of common variance will not be made here. The choice of dependent variables to include in this survey are based on considerations of heterogeneity among the response variables, interpretability, and utility. Data were collected on the five scales of the Job Descriptive Index (JDI) (Smith, Kendall, & Hulin, 1969), the two scales from the Leadership Behavior Description Questionnaire (LBDQ) (Stogdill & Coons, 1957), and a seven-point version of the General Motors Faces Scale assessing overall job satisfaction (Kunin, 1955).[2] These scales

are all standard instruments with known psychometric properties. Though the JDI and LBDQ have descriptive instructions, they have been validated against evaluative measures and are used widely as attitude scales. In the tradition of attitude measures, these scales refer to well defined stimulus objects in the work environment.

In addition, three scales were taken from Hackman and Lawler (1971): focus of motivation, experienced work motivation, and job involvement. The concept of a motive may be quite different from that of an attitude; certainly the stimulus objects for these three scales are less precise. It is difficult, however, to distinguish these scales from the other attitude measures due to their degree of covariation (see Table 2).

The final dependent variables were obtained from a developmental measure of organizational climate. Organizational climate refers to an even less precise stimulus object than the satisfaction or motivation scales. Recent definitions of climate (Schneider, 1975; Guion, 1973) distinguish conceptually between climate perceptions and attitudes, but an empirical distinction has not been well demonstrated. The 47 climate items were reduced to two orthogonal dimensions, labeled as "task performance contingencies" and "interpersonal behavior contingencies".

No more than 3% of the responses to any questionnaire item were missing. Missing data for each of the scales were estimated separately based on a component analysis model (Inn, 1972) prior to computing the scale scores.

Results

The means and standard deviations of the dependent variables for the two plants are shown in Table 1. Table 2 presents the intercorrelations among the questionnaire scales with KR-20 estimates of scale reliabilities in the diagonals for plants C and D.

Insert Tables 1 and 2 about here

Four separate cross-plant discriminant function analyses (Tatsuoka, 1971) will be reported here. The four were selected because of the relative importance of the independent variables used to aggregate workers into groups. Groups in each plant were defined by demographic characteristics (age and educational level) and structural characteristics (functional specialty and job level). The statistical significance of the resulting discriminant functions was tested by Bartlett's V statistic. Interpretation of the relative importance of each dependent variable's contribution to the separation of groups on the discriminant dimensions was made from the structure matrix[3] (Cooley & Lohnes, 1971). This is a correlation matrix between individuals' scores on the discriminant functions and their scores on the dependent variables. This method for interpretation of the meaning of the discriminant functions is independent of multi-cell inequity among the dependent variables (Meredith, 1964). The power of the discriminant solution, based on group differences in the discriminant space defined by the discriminant axes, to account for individual differences was estimated using the multivariate analogue of omega-squared (w^2) (Tatsuoka, 1970, 1973). The multivariate omega-squared estimate was not corrected for bias in the study because the sample size was large relative to the number of dependent variables. The multivariate omega-squared was computed from the first two eigenvalues in each cross-plant discriminant analysis. Although frequently more than two functions were significant, problems of psychological interpretation severely restricted their usefulness.

Results of Job Level by Plant Discriminant Analysis

The cross-plant discriminant analysis for hierarchical job level was performed on 17 groups--eight job levels for plant D and nine job levels for plant C.[4] Three discriminant functions significant beyond the .001 level were found. Figure 1 indicates the positions of these groups in the discriminant space defined by the first and second discriminant axes. See Table 3 for the identity of the groups plotted in discriminant space.

Insert Figure 1 and Table 3 about here

The first discriminant function accounts for 48% of the between-group variance. Generally, groups in both plants are ordered hierarchically by the first axis. That is, the higher the rank of the job in the organization, the greater its mean score on this function.

Group positioning is more consistent with hierarchical job ordering for plant C than plant D. The Spearman rank correlation coefficient between job level and group means on the primary discriminant function (Table 3) is .98 for plant C and .88 for plant D. Examination of the structure matrix (Table 4) indicates that group differences on the primary discriminant axis are basically due to satisfaction with work, pay, and promotional prospects, experiences work motivation and interpersonal behavioral contingencies.

Insert Table 4 about here

An examination of the group means on these dependent variables (Table 5) reveals that in plant C, the higher the job level, the greater the employee's work and pay satisfaction. Moreover, high-level personnel perceive stronger

interpersonal behavioral contingencies and experience greater work motivation than those occupying jobs lower in the hierarchy. The associations between these four attitudinal variables and job level are attenuated in plant D. Although the groups in plant D exhibit less consistency, the relationships are positive and reasonably consistent.

Insert Table 5 about here

The second discriminant dimension accounts for 26% of the between-group differentiation. It separates the groups according to plant membership, except for the two groups with the fewest numbers of workers. The lowest job level of plant D and the highest job level of plant C are not placed in the "appropriate" plant clusters. Rather, they are located near similar groups in the other plant. The group consisting of employees in the lowest job level in plant D is situated near the low job level groups of plant C. The plant C deviant group, consisting of employees occupying the highest job levels in that company, is closest to plant D's highest job level group in discriminant space. The positions of the groups on the second discriminant dimension are determined primarily by pay and promotional satisfaction (see Table 4). The group means on these individual variables (see Table) indicate that groups in plant D are more satisfied with their promotional opportunities but less satisfied with their pay than employees in plant C.

Plant D's lowest job level group has the highest mean on the 3rd discriminant function which is defined by LBDQ consideration and performance contingencies (negatively). An inspection of the group means on these and other dependent variables reveals this group to report a large amount of

consideration behavior from their supervisor and to perceive the weakest contingencies between task performance and rewards among all groups. They also show the highest degree of job involvement and the lowest degree of focus of motivation and supervisory initiating structure behavior. Thus, this group does not appear to be located in the plane defined by the first and second function. Instead, it is located at an extreme position in a third plane orthogonal to the first two.

Plant C's highest job level group, the other discrepant group in Figure 1 cannot be explained by the 3rd discriminant function and is only partially explained by the 4th significant function.

The power of the discriminant analysis for groups, classified simultaneously by job level and plant membership, to account for individual differences in evaluative and perceptual responses to the work environment is estimated as .48. That is, 48% of individual differences in attitudes can be explained by reference to group differences.

Results of Functional Specialty by Plant Discriminant Analysis

The cross-plant discriminant analysis for functional groups included five functional specialties in each plant: pressroom, bindery, preliminary, staff, and maintenance. Three discriminant functions statistically significant beyond the .001 level were identified. Figure 2 displays the groups' positions in the discriminant space defined by the first and second discriminant axes. The groups are identified in Table 6.

Insert Figure 2 and Table 6 about here

The first discriminant dimension, which accounts for 39% of between-group variance, primarily distinguishes among groups from the two plants.

An examination of Table 7 suggests this dimension is interpreted in terms of work, pay, and promotional satisfaction, and supervisors' initiation of structure. Group means (Table 8) on these variables show that group separation is basically due to the higher satisfaction with work and promotional opportunities and the perception of greater supervisory initiation of structure by plant D's employees compared to the higher satisfaction with pay of plant C's employees.

Insert Tables 7 and 8 about here

The second function differentiates D plant's staff employees and C plant's bindery employees from the rest of the groups. It accounts for 34% of the between-group variation. The staff personnel of plant D score the highest on this dimension; the bindery personnel of plant C score the lowest. This dimension is complexly defined by a linear combination of work and promotional satisfaction, leadership consideration behavior, and perception of interpersonal behavioral contingencies. An examination of the individual variables (Table 8) defining the second discriminant axis demonstrates that among the functional specialty groups in the two plants, plant D staff has the highest group mean on each of these variables.

The estimated multivariate omega-squared for the cross-plant functional specialty discriminant analysis, .39, indicates that between-group differences account for 39% of the variance in attitudes and perceptions of the work environment.

Results of Educational Level by Plant Discriminant Analysis

The cross-plant discriminant analysis by educational level was performed with five degrees of educational attainment: grade school, some high school,

high school diploma, some college, and a B.A. degree. There were three discriminant functions statistically significant beyond the .001 level. The location of the educational groups in discriminant space defined by the first two major discriminant dimensions is shown in Figure 3. Groups are identified in Table 9.

Insert Figure 3 and Table 9 about here

Fifty-four percent of between-group variability is accounted for by the first dimension. Groups in both plants are arranged by this dimension according to the degree of educational attainment. Except for a reversal between the two least educated groups (grade school and some high school) occurring in both plants, a positive monotonic relation between educational level and this dimension is evident. The Spearman rank order correlation between the rankings of the groups by level of education and by their group means on the primary discriminant (see Table 9) function is .90 for both plants C and D. We are willing to argue that the education-response relationship on this first function is actually U-shaped rather than monotonically positive. The same reversal in both plants makes this nearly compelling. The rank order correlation of .90 made this conclusion somewhat tentative, however. Groups are also differentiated according to their plant membership by the primary function. An examination of the structure matrix (Table 10) indicates that satisfaction with promotional opportunities almost exclusively determines the meaning of the primary discriminant dimension.

Insert Table 10 about here

Groups means on this single satisfaction measure (Table 11) show that

the higher the level of achieved education, the greater an employee's satisfaction with promotional opportunities. This finding is consistent across both plants. Moreover, plant D's employees are, on the whole, more satisfied with promotional opportunities than plant C's employees.

Insert Table 11 about here

The secondary discriminant dimension also orders groups according to the level of educational attainment regardless of their plant membership. It accounts for 25% of between-group differentiation. The relationship between educational level and the secondary discriminant function is positive and monotonic. The Spearman rank order correlation coefficient between the educational ranking of groups and their group means on the second function (see Table 9) is 1.00 for both plants. The second discriminant dimension is defined by its covariation with pay satisfaction and perceptions of performance and interpersonal behavioral contingencies (see Table 10). The group means on these separate variables indicate (Table 11) that in each plant, higher educational attainment is associated with greater satisfaction with pay and with stronger perceptions of performance and interpersonal behavioral contingencies.

The estimate of the multivariate omega-squared for the cross-plant educational discriminant analysis is .27, indicating that group means, defined by educational level and plant membership, can account for 27% of individual differences in the dependent variables.

Results of Age by Plant Discriminant Analysis

The cross-plant age discriminant function analysis defined five age groups for plant D: under 25 years, 25-29 years, 30-34 years, 35-39 years,

40-44 years, 45-49 years, 50-54 years, 55-59 years, and 60 years or over. Three significant discriminant functions beyond the .001 level were found. Figure 4 shows the positions of these age groups in the discriminant space defined by the first and second axes. Groups are identified in Table 12.

Insert Figure 4 and Table 12 about here

The first function accounts for 53% of the discriminable variance. Age groups in both plants C and D are placed in roughly chronological order by the first function. There is a reversal between the oldest and the next oldest age groups in both plants. However, the plants' oldest age groups possess the fewest employees; its position may therefore be somewhat unstable. The same reversal in both plants is again noteworthy and may indicate a real effect and not a random fluctuation. The Spearman rank order correlation coefficient between the rankings of groups by age and by their means on the first discriminant function (see Table 12) is .90 for plant D and .98 for plant C. Thus, with some reservation we might conclude a monotonic positive relationship exists between age and the primary dimension. Group differences on the primary axis are mainly attributable to satisfaction with work and promotional opportunities, and job involvement (Table 13). The group means on these dependent variables indicate that in both plants the older employees are more involved

Insert Table 13 about here

with their jobs and are more satisfied with the work itself than their younger colleagues. (Table 14).

Insert Table 14 about here

The second discriminant dimension, which accounts for 25% of between-group variability, operates chiefly to separate groups by plant. The age groups of plant C, but not plant D, are also chronologically ordered by this dimension. The Spearman rank order correlation coefficient between the age ranking of the groups and mean scores on the second discriminant function (Table 21) is .30 for plant D and .97 for plant C. Hence, the relationship between age and second discriminant function is positive monotonic only for plant C. The secondary discriminant axis assesses differences related to work and promotional satisfaction, experienced work motivation, and job involvement (see Table 13). An inspection of the group means on these variables (see Table 14) show that plant D's employees are generally more satisfied with their work and promotional and advancement possibilities and experience greater work motivation and job involvement relative to plant C's employees. Moreover, increasing age is associated with greater experienced work motivation and job involvement and satisfaction with work for workers in plant C, but not in plant D.

Grouping employees on the basis of their age and plant affiliation achieves a discriminatory power of .37; that, 37% of the variability in attitudes toward and about the organization may be attributed to group membership.

Discussion

The results of these multiple cross-plant discriminant analyses are consistent with the findings of past studies (Herman & Hulin, 1972; Herman,

Dunham, & Hulin, 1975) but go considerably beyond the earlier results. Employees' attitudes and perceptions of their work environment can be summarized by the characteristics of their position in the organizational structure and demographic variables. Specifically, differential evaluations and perceptions are meaningfully related to structural classification of employees based on hierarchical job level and functional specialty. Attitudinal differences are also significantly associated with partitioning of groups of employees by personal characteristics such as age and educational level. Further, the consistencies of relationships across plants was encouraging.

Structural variables are more powerful than personal characteristics in accounting for variance in this particular dependent variable set in these plants, given the independent variables used to generate groups of workers, a result which also agrees with previous findings (Herman & Hulin, 1972; Herman, Dunham, & Hulin, 1975). Job level differences accounted for nearly 48% of individual attitude differences. More than 39% of organizational attitudes may be summarized by functional specialty groupings. In contrast, partitions of workers by personal characteristics accounted for 37% (in the case of age) and for 27% (in the case of education) of the variation in responses to the work environment. Thus, whatever is being indexed by age and educational level, which a worker brings to the organization, while meaningful, is (are) less important in influencing attitudes toward and about the organization than is position in the organizational structure. Once again, it must be reiterated that the more powerful effects of structural variables in accounting for response variance should be regarded as dependent on the particular individual differences, structural characteristics, and responses chosen for analysis. The generality

of the results will depend on the choice of these three sets of variables as well as the overall validity of the result. (Which we obviously question.)

In this study, the dependent variables, which contributed most to differentiation among groups, however defined, are predominantly evaluative responses to aspects of their work environment (JDI satisfaction scales). Major contributors to group differences in the four discriminant analyses, as assessed by the number and strength of their relationships to the primary and secondary discriminant functions, were made by satisfaction with work, pay, and promotional opportunities. The importance of perceptual (climate perceptions, LBDQ) and need-motive measures (focus of motivation, job involvement) are minimal in this regard. Apparently, either employees within groups do not share perceptions and motives (within-group variance is large) or regardless of group membership, they possess very similar perceptions and motives (small between-group variance).

Furthermore, dependent variables of major significance in a similar study (Herman & Hulin, 1972) were basically satisfaction with aspects of an employee's position (assessed by the JDI) and evaluation of organizational operations which affect how an employee carries out his primary work task. Following a conceptual distinction between affect and belief in attitude theory (Fishbein & Ajzen, 1975; Triandis, 1971), Schneider (1975) distinguished between job satisfaction, defined as the evaluation of organizational structure, practices and procedures and/or evaluation of outcomes derived from organizational participation, and climate perception, which refers to the direct perception of the organizational situation. A tentative conclusion on the basis of Herman & Hulin (1972) and the present study, is that affective reactions to organizational practices, procedures, and outcomes--

not descriptions of them--are the prepotent determinants of group differentiation if Schneider's conceptual distinction is applied. It is of interest to note that in the functional specialty by plant discriminant function analysis, LBDQ consideration was one of the dependent variables which contributed to the discrimination among groups. Further, this is the only analysis in which groups were aggregated in such a fashion that group membership and supervisor were even partially confounded. Thus, the appearance of LBDQ consideration in this analysis is both meaningful and expected. Differences on motivational scales are less frequent and important when they do occur.

In each cross-plant discriminant analysis conducted, a major discriminant function separating groups by their plant membership is inevitably uncovered. These plant differences are redundant across the four analyses. Promotional satisfaction, either singly or in association with other dependent variables, defines this discriminant function on each occasion. In the two structural cross-plant discriminant solutions, pay satisfaction contributes to the differentiation of groups by plant. Thus workers in plant D are more satisfied with the promotional and advancement opportunities offered in their plant, but plant C's workers are inclined to be more satisfied with their income, pension, and fringe benefits. These differential plant attitudes may be a function of dissimilarities between the plants in either broad structural features (i.e., different shape, technological range, etc.) or demographic make-up of their employees or some combination of both. It is also objectively true that the promotional opportunities in plant D were better for the employees since they were younger and the plant was undergoing expansion while plant C was not.

Despite the large plant differences routinely found in these analyses, the patterning of groups in discriminant space appears similar across the two plants. Groups are aligned by discriminant axes according to their positions on the structural and demographic dimensions. The nature, form, and strength of the relationships between the linear composites of dependent variables, which differentiate groups aggregated on the basis of the independent variables, and structural and demographic variables remain relatively invariant across the two plants. Further, although the discriminant functions which distinguish the groups by their plant affiliation are similarly defined in the four cross-plant analyses, the discriminant axes which chiefly order groups by structural and individual difference dimensions are qualitatively distinct. The dependent variables which defined the discriminant function are different in each instance.

Groups are ranked according to their job level by the primary discriminant function in the plant by job level discriminant analysis. The relationship between job level and this discriminant dimension is positive and monotonic in both plants. However, the strength of the relationship differs between the two plants. Fewer job levels observed in plant D may be partially responsible for the weaker relationship. This discriminant function is defined by its strong association with work, pay, and promotional satisfaction, experienced work motivation, and perception of interpersonal behavioral contingencies. Group means of these dependent variables show that individuals who occupy higher positions in the vertical distribution of jobs are more satisfied with their pay and work than those in lower level jobs. They also experience higher intrinsic motivation (gain personal satisfaction when their job is done well) and perceive stronger reinforcement contingencies for interpersonal behaviors than individuals in lower positions.

The location of functional specialty groups in discriminant space is different in each plant. The second discriminant axis appears to be reflecting structural and task characteristics of these groups; the primary function reflecting their plant membership by separating them into plant clusters. The functional specialty groups are ranked by the secondary discriminant axis in the following manner: staff, preliminary, maintenance, bindery, and press for plant D; and staff, maintenance, preliminary, press, and bindery for plant C. Thus, ordering of these groups differs within each plant; yet staff personnel achieve the highest mean score on this function, the preliminary and maintenance workers (production service departments) have intermediate mean scores, and bindery and press workers (production departments) the lowest scores. Gross similarities do exist between the two plants in terms of how the groups are generally ordered with respect to this discriminant dimension. Satisfaction with work and promotional opportunities and perception of leadership consideration and interpersonal behavior contingencies define the secondary discriminant axis. However, failure of the group means on these individual dependent variables to show any obvious consistent rank ordering (see Table 8) of functional specialty groups across plants underscores the complexity of the phenomena under study and the necessity for a multivariate approach. Only a dimension (function) representing a linear combination of these multiple dependent variables, which optimizes group differentiation, can reveal cross-plant generalizability.

The discriminant analysis of groups that are classified on the basis of the level of educational attainment displays relationships which are uniformly strong, positive, and nearly monotonic (in the case of the second discriminant function) across plants. The primary discriminant function

is uniquely defined by promotional satisfaction. Regardless of the overall plant differences in expressed satisfaction with promotional opportunities, this satisfaction is also related to educational level for workers within each of the two plants. The secondary discriminant function is related to pay satisfaction, performance, and perceptions of interpersonal behavioral contingencies. In both plants workers who achieved a high level of formal education, perceive stronger performance and interpersonal behavioral contingencies, and are more satisfied with their income, pension, and fringe benefits than those who were less educated. The slightly U-shaped relationship between educational level and scores on the first discriminant function might be explained by an expectancy hypothesis.

The cross-plant age discriminant function analysis revealed a strong positive relationship. Work satisfaction, promotional opportunities, satisfaction, and job involvement determine variance along this dimension. An examination of the age groups' means on these variables show that the older workers feel more personally involved with their work than younger workers, a motivation which is consistent with their higher evaluation of the work itself. However, the relationship between the second discriminant function and age is moderated by plant differences. Only in plant C are they associated strongly and monotonically positive. The secondary discriminant dimension assesses differences related to work and promotional satisfactions, experienced work motivation, and job involvement. Inspection of group means shows only plant C's groups exhibiting an association between increasing age and greater work satisfaction and job involvement. Older workers in this same plant are also more likely to report that they experience positive affect when their performance is good and negative affect when performance is poor than are younger workers.

Thus, the patterning of groups in discriminant space does appear similar for both plants in several of the discriminant solutions. Cross-plant generalizability is most strongly evident in the analyses involving groups classified by educational level, moderately so for hierarchical job level and age, and least in the analysis of the functional specialty groups.

Two extrapolations might be made from these findings if we recognize they are clearly extrapolations going substantially beyond the data and have not been subjected to rigorous test. The first is that given the particular set of variables under study, extra-organismic variables (structure characteristics) continue to explain more variance in organizationally relevant responses than do individual differences. The second is that even with the more powerful influence of the environmental variables on response variance, the stability and consistency of the locations of groups in discriminant space seems striking in the cases of the two plants by individual differences analyses. One interpretation of this would be that the very reasons which led us to classify variables as individual differences as opposed to organizational structural variables are valid. Individual differences were variables considered to have consistent meanings regardless of environmental setting. In these analyses they appear to. Old is old no matter where you work, and having a high degree of educational attainment is significantly different than having a low degree of education. At the same time that characteristics of organizational position are accounting for more variance, their meanings may be more idiosyncratic. The meaning of working in a particular department seems to depend to a great extent on the particular organizational setting of that position. Local norms and values are developed which may depend as much on the particular supervisors/worker and worker/worker relations as they do on the

characteristics of the tasks being performed. This explanation obviously needs explication and testing, but seems viable given the data at hand.

One additional finding is worth noting. It seems striking that in two of the analyses, we obtained both monotonic and non-monotonic relationships between individual differences (age and education level) and job responses. Thus, within the same sample of workers, using the same dependent measures and the same predictor variables, two somewhat contradictory conclusions might be reached. When the complexities of the relationships are the determinants of the findings rather than artificially examining one response at a time for relationships, we find that the world is indeed pretzel shaped. This also suggests that many of the debates which have been waged as to whether X has a monotonic or a U-shaped relationship with Y are fruitless. The answer may well be "Both--depending on the complexity you allow to exist in Y."

Footnotes

[1]This research was supported in part by NSF grant number Charles L. Hulin principal investigator and in part by Office of Naval Research, grant number N000-14-75-C-0904, Charles L. Hulin and Jeanne B. Herman co-principal investigators. The authors thank the officials of the company involved for their cooperation.

[2]The Faces Scale was not included in the discriminant analyses. It was scored differently in the two plants since employees in one plant responded to a scale consisting of six faces and employees in the other plant responded to a scale with seven faces. The senior author accepts full blame for this foul-up.

[3]Discriminant function weights are not discussed because of the problems of multicollinearity. Tables of discriminant weights are included for further reference. Weights on the function (regression, canonical or discriminant) are highly unstable in cross-validation (e.g., Thorndike & Weiss, 1972) precisely because of multicollinearity. Greater stability and interpretability are offered by structure loadings, i.e., the correlations between the linear composite and the constituent variables.

[4]A common job level scale was developed iteratively. Initially, lists of jobs within each plant separately were assigned scale values reflecting job complexity, training time, and responsibility by two members of the research team and representatives from the personnel and production departments. These two lists were merged by the investigators working independently of the company officials. This merged list was developed by selecting marker jobs identical to the plants (press take away men,

fork lift operators, press men, roll tender, etc.). The two lists were sketched and contracted as necessary in order to produce a single scale with consistent meaning across the two plants. The job scale produced by the investigators was reviewed by personnel department members from both plants and final minor adjustments were made.

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Table 1

Means and Standard Deviations on Dependent Variables

	Plant C		Plant D	
Dependent Variables	Mean	Standard Deviation	Mean	Standard Deviation
JDI Work	27.32	12.86	28.88	13.47
JDI Supervision	34.90	13.12	34.47	10.39
JDI Pay	15.55	7.24	13.34	7.46
JDI Promotions	5.98	6.33	11.75	7.86
JDI Co-Workers	39.52	12.45	38.42	12.75
LBDQ Consideration	33.87	7.37	35.39	7.51
LBDQ Initiation	33.15	6.08	33.51	5.70
Focus	12.29	1.76	12.50	1.68
Experienced Motivation	12.23	2.22	12.25	2.56
Job Involvement	7.95	2.53	8.07	2.87
Performance Contingencies	0.00	.94	0.00	1.00
Interpersonal Behavior Contingencies	0.00	.91	0.00	1.00

Table 2

Correlation Matrix of Dependent Variables

	Work	Super-vision	Pay	Pro-motion	Co-Worker	Consider-ation	Struc-ture	Focus	Exper. Motiv.	Job Involve.	Perf. Contin.	Interp. Beh. Contingencies
ork	.90	.45	.41	.42	.42	.43	-.03	.25	.51	.41	-.26	.47
upervision	.40	.85	.31	.40	.31	.78	.01	.16	.27	.22	-.39	.48
ay	.44	.38	.82	.34	.31	.30	-.01	.12	.24	.10	-.2[illegible]	.43
romotions	.45	.35	.39	.86	.28	.40	.08	.11	.20	.21	-.36	.38
o-workers	.28	.18	.20	.17	.89	.26	.10	.15	.24	.16	-.25	.35
onsideration	.40	.72	.44	.30	.11	.86	-.02	.18	.26	.22	-.38	.49
tructure	-.20	-.10	-.14	-.15	-.05	-.07	.93	.23	.06	.07	-.12	-.08
ocus	.32	.22	.08	.19	-.01	.24	.07	.61	.36	.19	-.13	.15
xperienced Motivation	.57	.34	.30	.32	.17	.32	-.06	.40	.96	.42	-.14	.28
ob Involve-ment	.50	.21	.28	.26	.22	.23	-.13	.19	.47	.82	-.25	.11
erformance Contingencies	-.24	-.44	-.32	-.22	-.14	-.41	.05	-.03	-.18	-.34	---	-.04
nterpersonal Behavior Contingencies	.46	.49	.45	.37	.26	.50	-.22	.19	.40	.20	.00	---

ote. Entries in the diagonal are KR-20 estimates of reliability based on plant D.
Entries above the diagonal are from plant C; N = 1482. Entries below the diagonal are from plant D; N = 413.

Table 2

Job Level by Plant Discriminant Analysis

Group Means on Discriminant Functions

Group Number	Group Definition	N	Axis I	Axis II
1 - Plant D	Job levels 1, 2	12	5.49	.76
2 - Plant D	Job level 3	81	4.70	5.08
3 - Plant D	Job levels 4-6	54	6.94	4.79
4 - Plant D	Job level 7	54	7.33	5.70
5 - Plant D	Job level 8	40	6.58	4.08
6 - Plant D	Job levels 9, 10	28	9.69	4.93
7 - Plant D	Job levels 11-14	106	8.10	4.85
8 - Plant D	Job levels 15-18	20	7.47	4.20
9 - Plant C	Job levels 1, 2	141	5.06	1.46
10 - Plant C	Job level 3	174	4.95	1.88
11 - Plant C	Job level 4-6	171	5.79	1.18
12 - Plant C	Job level 7	72	6.12	-.11
13 - Plant C	Job level 8	100	6.46	1.27
14 - Plant C	Job level 9, 10	169	6.71	.41
15 - Plant C	Job levels 11-14	369	7.30	.24
16 - Plant C	Job levels 15-18	213	8.18	.28
17 - Plant C	Job levels 19-20	18	9.36	4.05

Table 4

Job Level by Plant Discriminant Analysis

	Structure Matrix (Population Estimates)		Standardized (Scaled) Discriminant Weights	
Variable	I	II	I	II
JDI Work	.77	-.11	49.77	-26.74
JDI Supervision	.20	-.05	-20.94	-52.39
JDI Pay	.47	-.37	20.90	-76.46
JDI Promotions	.49	.69	23.83	144.54
JDI Coworkers	.30	-.10	3.03	-6.34
LBDQ Consideration	.26	.13	7.55	58.39
LBDQ Initiation	-.02	.08	4.67	.88
Focus	.23	.07	3.30	16.90
Experienced Motivation	.46	-.11	9.47	-10.60
Job Involvement	.26	-.04	-.58	-11.59
Performance Contingencies	.11	-.3	36.93	1.87
Interpersonal Behavior Contingencies	.53	-.12	11.24	-26.46

Table 5

Job Level by Plant Discriminant Analysis - Group Means on Dependent Variables

Variable	Groups 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
JDI Work	27.33	13.14	30.41	32.96	28.14	38.96	32.33	40.75	19.28	19.28	25.89	25.47	26.92	28.21	31.28	36.20	41.56
JDI Supervision	39.83	31.85	37.70	37.57	32.08	39.54	31.22	39.44	33.45	32.63	33.54	33.88	35.63	34.72	34.71	39.28	45.44
JDI Pay	14.33	10.33	14.96	12.03	11.25	18.32	12.28	21.00	12.63	12.51	12.72	14.12	15.75	15.37	17.01	20.10	21.39
JDI Promotions	6.25	7.95	12.02	13.56	10.06	15.75	12.18	16.72	4.13	5.09	4.63	3.47	6.79	5.05	6.18	8.97	17.83
JDI Coworkers	41.75	35.54	34.43	35.96	40.55	42.25	39.63	44.94	33.15	35.67	37.07	38.37	38.60	38.14	40.22	42.79	48.06
LBDQ Consideration	37.83	33.76	39.09	37.22	31.08	39.71	32.88	40.63	33.09	31.84	33.50	31.82	34.27	33.95	33.97	36.45	39.72
LBDQ Initiation	31.50	34.33	33.82	32.52	33.35	32.66	35.86	31.97	33.17	34.32	32.15	34.81	33.57	32.16	32.35	34.48	35.67
Focus	11.50	11.90	12.65	12.89	12.12	12.75	12.85	12.78	12.26	11.79	12.01	12.32	12.36	12.51	12.34	12.63	13.50
Experienced Motivation	12.50	10.07	12.54	12.17	12.33	13.64	12.96	13.59	11.68	11.12	11.84	12.15	12.24	12.48	12.67	12.34	14.39
Job Involvement	10.67	6.30	8.56	8.70	8.16	9.39	7.72	9.53	7.18	7.24	7.97	8.15	7.44	7.83	8.10	8.33	8.56
Performance Contingencies	-.97	.12	-.44	-.22	.03	-.37	.50	-.22	-.13	-.27	-.13	.18	-.11	.19	.20	-.02	-.49
Interpersonal Behavior Contingencies	.30	-.53	-.02	.06	-.44	.19	.21	.02	-.28	-.47	-.26	-.21	.05	.02	.10	.60	.97

Table 6

Functional Specialty by Plant Discriminant Analysis

Group Means on Discriminant Functions

Group Number	Group Definition	N	Axis I	Axis II
1 - Plant D	Pressroom	152	6.74	1.19
2 - Plant D	Bindery	134	6.49	4.46
3 - Plant D	Preliminary	29	4.86	5.35
4 - Plant D	Staff	51	3.36	8.45
5 - Plant D	Maintenance	38	3.50	5.23
6 - Plant C	Preliminary	327	.25	1.00
7 - Plant C	Pressroom	299	4.62	.86
8 - Plant C	Bindery	454	3.13	-1.40
9 - Plant C	Maintenance	74	-.11	3.21
10 - Plant C	Staff	208	.57	4.01

Table 7

Functional Specialty by Plant Discriminant Analysis

	Structure Matrix (Population Estimates)		Standardized (Scaled) Discriminant Weights	
Variable	I	II	I	II
JDI Work	-.43	.65	-114.78	96.93
JDI Supervision	-.11	.32	2.27	-78.62
JDI Pay	-.33	.21	-57.16	-35.30
JDI Promotions	.50	.75	162.84	120.27
JDI Coworkers	-.13	.17	1.56	-13.10
LBDQ Considerations	-.10	.52	-10.87	104.73
LBDQ Initiation	.37	-.31	58.44	-61.08
Focus	.02	.05	15.91	-23.91
Experienced Motivation	-.23	.33	-15.44	19.35
Job Involvement	-.10	23	1.88	-17.99
Performance Contingencies	-.08	-.14	-7 87	21.36
Interpersonal Behavior Contingencies	-.25	.45	-22.49	9.04

Table 8

Functional Specialty by Plant Discriminant Analysis - Group Means on Dependent Variables

Variable	Groups 1	2	3	4	5	6	7	8	9	10
JDI Work	22.78	27.84	34.00	39.39	34.30	30.66	25.71	22.94	36.60	34.79
JDI Supervision	29.55	37.24	30.83	39.57	35.76	32.89	35.79	33.14	37.15	40.99
JDI Pay	11.22	13.75	17.52	19.94	13.29	16 02	15 96	14 18	17 54	17 60
JDI Promotion	9 27	12.60	11.55	15.57	11.34	4.05	8 86	4 50	7 35	8.57
JDI Coworkers	40.90	33.25	37.66	43.80	40.16	38.73	38 93	36.53	42 70	41.75
LBDQ Consideration	31.45	37.48	33.28	40.41	35.37	33.62	33 79	32 60	35.30	37.85
LBDQ Initiation	34.81	33.07	34.17	31.94	31.66	31.59	34.82	34.53	32.08	30.66
Focus	12.34	12.67	12.59	12.61	12.39	12.42	12.19	12.37	12.26	12.28
Experienced Motivation	11.49	12.16	12.62	13.45	13.16	12.40	12.12	11.85	13.00	12.95
Job Involvement	7.30	8.16	7.59	8.82	9.03	7.82	7.61	7.63	8.61	8.26
Performance Contingencies	.37	-.35	.58	-.16	-.37	.23	-.12	-.001	.10	-.19
Interpersonal Behavior Contingencies	-.29	-.10	.12	.73	.33	-.0001	.03	-.22	.29	.50

Table 9

Educational Level by Plant Discriminant Analysis

Group Means on Discriminant Functions

			Axis	
Group Number	Group Definition	N	I	II
1 - Plant D	Grade School	20	4.12	-.27
2 - Plant D	Some H. S.	53	4.04	.38
3 - Plant D	H. S. Diploma	215	5.34	1.04
4 - Plant D	Some college	115	6.01	1.54
5 - Plant D	B.A. Degree	27	6.89	2.05
6 - Plant C	Grade School	25	2.45	-.23
7 - Plant C	Some H. S.	123	2.33	.66
8 - Plant C	H. S. Diploma	1021	2.48	1.40
9 - Plant C	Some college	242	2.95	1.52
10 - Plant C	B. A. Degree	71	3.77	2.01

Table 10

Educational Level by Plant Discriminant Analysis

	Structure Matrix (Population Estimates)		Standardized (Scaled) Discriminant Weights	
Variable	I	II	I	II
JDI Work	.15	.25	-.56	8 36
JDI Supervision	-.01	.09	-48.67	5.70
JDI Pay	-.13	.50	-39.49	26.62
JDI Promotions	.80	.04	117.86	-2.03
JDI Coworkers	.04	.25	1.99	8.22
LBDQ Consideration	.18	.03	42.23	-7.31
LBDQ Initiation	.01	-.08	-2.69	2.01
Focus	.13	.07	12.90	2.34
Experienced Motivation	.04	.10	-7.52	-.05
Job Involvement	.06	-.28	-2.59	-16.16
Performance Contingencies	.08	.54	35.13	35.77
Interpersonal Behavior Contingencies	.15	.57	-4.61	17.57

Table 11

Educational Level by Plant Discriminant Analysis - Group Means on Dependent Variables

Variable	Groups 1	2	3	4	5	6	7	8	9	10
JDI Work	33.20	26.96	26.90	30.68	35.26	27.48	25.66	27.41	27.79	37.68
JDI Supervision	33.60	36.26	34.29	33.30	34.56	34.40	34.94	34.35	35.21	41.82
JDI Pay	17.35	12.62	12.80	14.30	17.81	12.52	13.68	15.46	15.81	20.17
JDI Promotions	10.40	9.04	11.12	12.73	15.74	6.76	5.44	5.53	6.57	11.24
JDI Coworkers	35.50	38.08	38.71	37.98	41.96	31.88	36.54	38.71	38.26	42.38
LBD$_1$ Consideration	34.60	36.94	35.03	34.55	36.67	33.00	33.80	33.51	34.40	37.73
LBD$_2$ Initiation	31.15	33.77	33.99	33.13	31.96	32.44	33.65	33.32	32.63	31.97
Focus	11.85	12.15	12.46	12.96	12.15	11.96	12.41	12.27	12.37	12.25
Experienced Motivation	12.45	11.96	12.07	12.57	12.30	11.96	12.37	12.16	12.27	13.01
Job Involvement	10.70	8.36	7.73	7.90	9.00	9.84	8.37	7.76	7.49	8.79
Performance Contingencies	-.90	-.54	.03	.24	.36	-.85	-.34	.05	.09	-.15
Interpersonal Behavior Contingencies	-.24	-.20	-.15	.24	.73	-.44	-.29	-.03	.06	.85

Table 12

Age by Plant Discriminant Analysis

Group Means on Discriminant Functions

Group Number	Group Definition	N	Axis I	Axis II
1 - Plant D	Under 25 yrs.	157	1.05	11.24
2 - Plant D	25-29 yrs.	172	2.05	13.06
3 - Plant D	30-34 yrs.	47	3.54	12.00
4 - Plant D	35-39 yrs.	44	5.31	13.11
5 - Plant D	40-44 yrs.	11	4.85	11.85
6 - Plant C	Under 25 yrs.	147	2.28	8.17
7 - Plant C	25-29 yrs.	307	3.45	9.75
8 - Plant C	30-34 yrs.	282	4.42	10.26
9 - Plant C	35-39 yrs.	229	5.12	10.29
10 - Plant C	40-44 yrs.	192	5.68	10.81
11 - Plant C	45-49 yrs.	140	6.08	10.70
12 - Plant C	50-54 yrs.	103	6.10	10.99
13 - Plant C	55-59 yrs.	47	6.85	11 63
14 - Plant C	60 yrs. and over	35	6.63	11.11

Table 13

Age by Plant Discriminant Analysis

	Structure Matrix (Population Estimates)		Standardized (Scaled) Discriminant Weights	
Variable	I	II	I	II
JDI Work	.41	.66	54.97	59.79
JDI Supervision	.19	.17	23.11	-54.54
JDI Pay	.22	-.06	19.80	-57.28
JDI Promotion	-.46	.61	-122.47	62.67
JDI Coworkers	.16	.20	.49	3.39
LBDQ Consideration	.11	.36	-14.90	54.19
LBDQ Initiation	-.03	-.02	-4.41	-1.99
Focus	.06	.26	-14.11	3.93
Experienced Motivation	.38	.51	24.12	22.26
Job Involvement	.41	.56	43.60	38.68
Performance Contingencies	-.11	-.02	-17.69	33.55
Interpersonal Behavior Contingencies	.19	.31	23.55	1.60

Table 14

Age by Plant Discriminant Analysis - Group Means on Dependent Variables

Variable	Groups 1	2	3	4	5	6	7	8	9	10	11	12	13	14
JDI Work	23.18	31.69	30.30	36.11	28.91	17.28	25.36	27.46	28.48	30.63	31.57	32.71	35.91	36 71
JDI Supervision	32.68	34.74	35.38	36.23	37.73	31.77	32.75	35.62	35.30	34.48	36.77	37.14	39 60	40 29
JDI Pay	12.20	14.33	12.77	15.39	14.64	14.06	15.72	15.33	15.46	15.51	16.02	15.83	16.98	18.14
JDI Promotions	11.03	13.35	9.23	9.70	9.55	5.94	7.24	6.12	5.59	4.93	5.25	5.53	5.79	6.83
JDI Coworkers	36.50	39.29	38.68	42.52	39.36	35.54	38.29	37.55	37.06	39.45	41.34	40.77	42.81	41.66
LSDQ Consideration	33.97	35.36	36.11	37.89	37.55	32.33	32.57	34.33	33.79	33.69	34.49	35.48	38.90	35.94
LSDQ Initiation	34.32	33.28	32.87	32.59	29.55	33.25	33.48	33.48	32.83	32.83	34.20	32.19	32.74	33.26
Focus	12.32	12.62	12.94	12.25	12.45	11.74	12.18	12.49	12.14	12.34	12.65	12.66	12.47	12.11
Experienced Motivation	11.50	12.56	12.68	13.16	12.27	10.37	11.74	12.39	12.59	12.61	12.97	12.85	12.87	13.06
Job Involvement	7.10	8.25	8.13	10.07	10.55	6.46	7.13	7.52	7.97	8.36	8.78	9.01	9.81	9.46
Performance Contingencies	.14	.14	-.28	-.52	-.91	-.15	.00	.15	.05	.29	-.14	-.30	-.49	-.45
Interpersonal Behavior Contingencies	-.24	.17	-.01	.16	.22	-.51	-.05	08	.06	.17	.14	-.03	.07	.00

FIGURE CAPTIONS

Fig. 1 Group means on the discriminant vectors for the job level by plant analysis.

Fig. 2 Group means on the discriminant vectors for the functional specialty by plant analysis.

Fig. 3 Group means on the discriminant vectors for the educational level by plant analysis.

Fig. 4 Group means on the discriminant vectors for the age by plant analysis.

FIG. 1

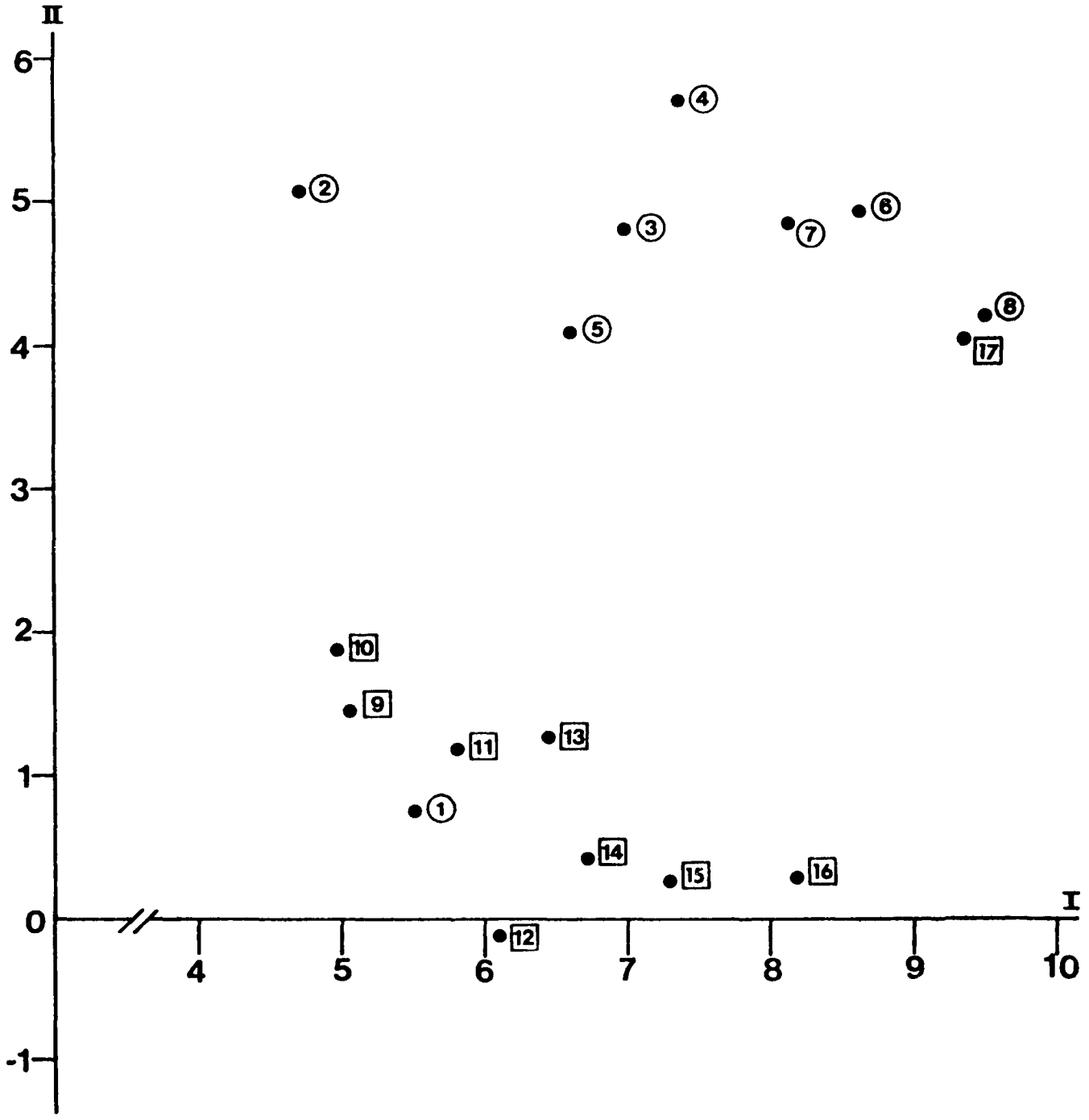


FIG. 2

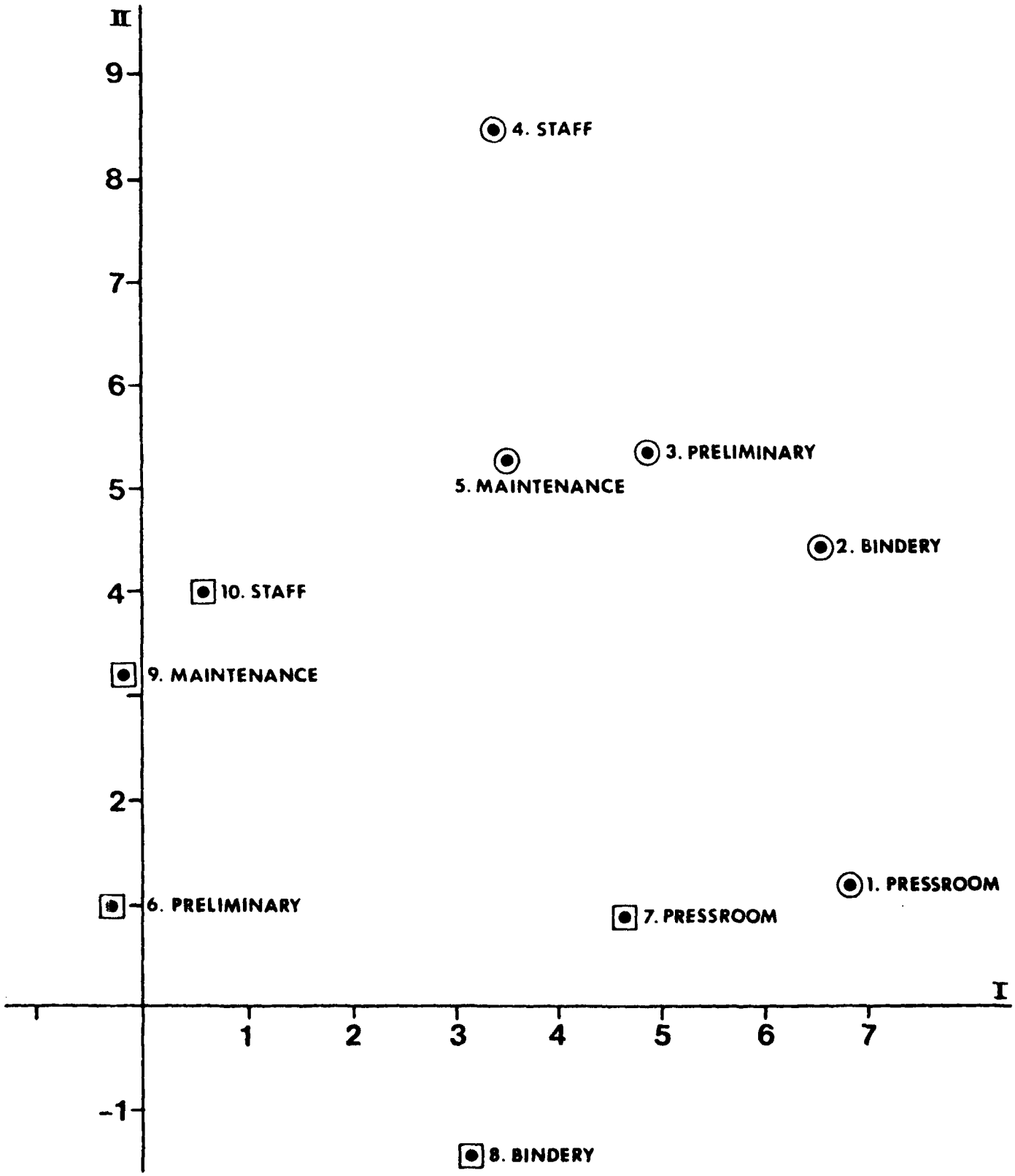
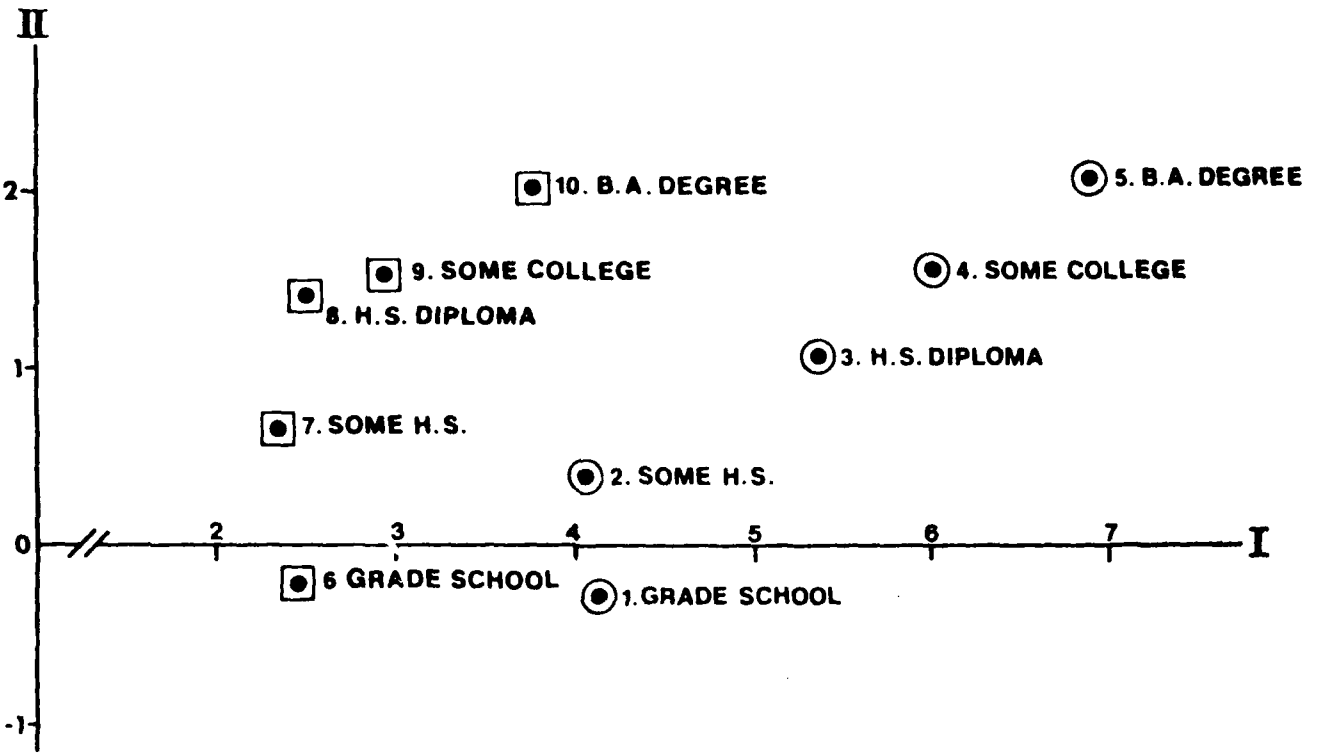

II
9
8
7
6
5
4
2
-1
4. STAFF
3. PRELIMINARY
5. MAINTENANCE
2. BINDERY
10. STAFF
9. MAINTENANCE
1. PRESSROOM
6. PRELIMINARY
7. PRESSROOM
I
1
2
3
4
5
6
7
8. BINDERY

FIG. 3


II
2
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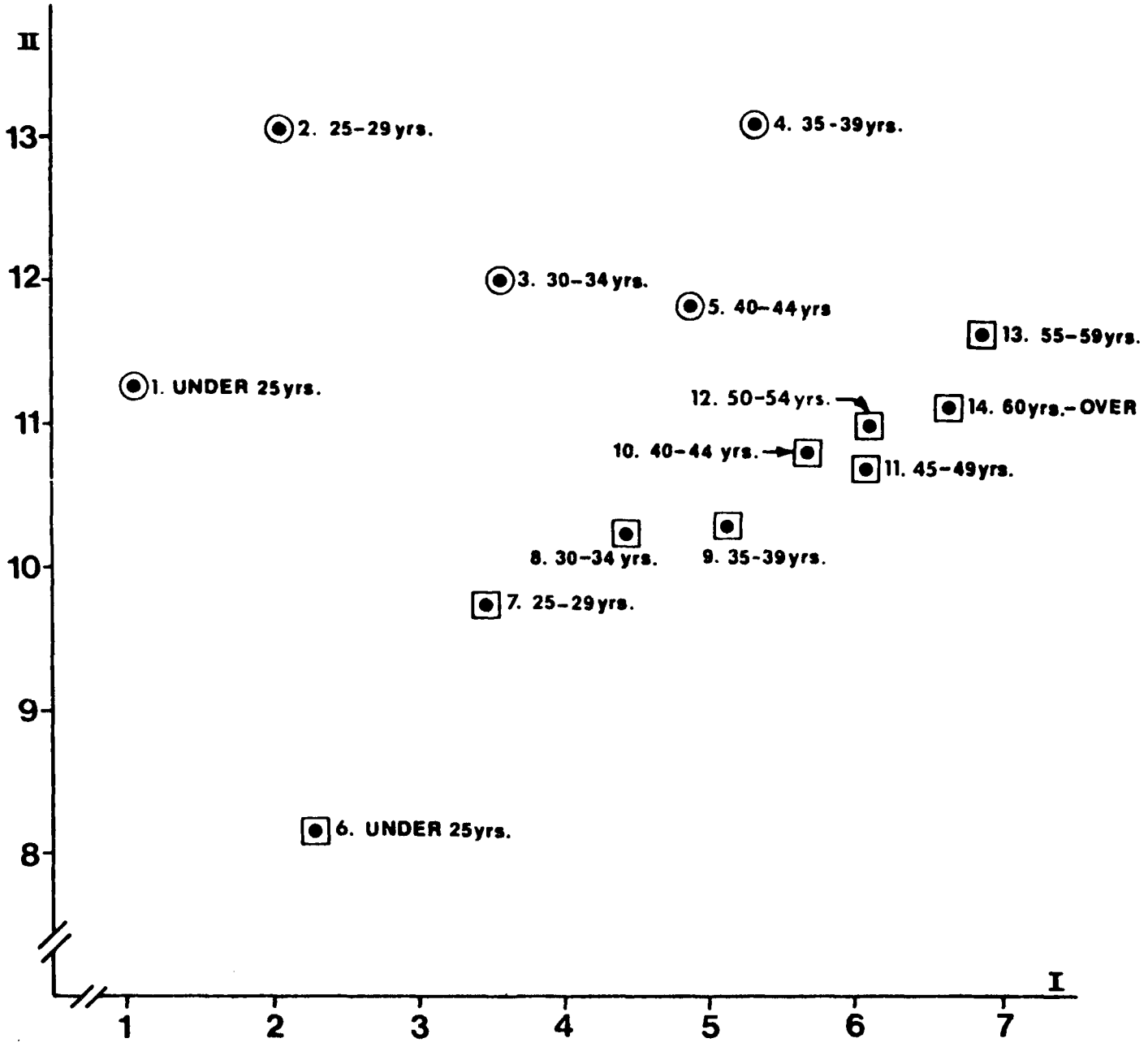
0
-1
10. B.A. DEGREE
5. B.A. DEGREE
9. SOME COLLEGE
4. SOME COLLEGE
8. H.S. DIPLOMA
3. H.S. DIPLOMA
7. SOME H.S.
2. SOME H.S.
2
3
4
5
6
7
I
6 GRADE SCHOOL
1. GRADE SCHOOL

FIG. 4


II
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2. 25-29 yrs.
4. 35-39 yrs.
3. 30-34 yrs.
5. 40-44 yrs
13. 55-59 yrs.
1. UNDER 25 yrs.
12. 50-54 yrs.
14. 60 yrs.-OVER
10. 40-44 yrs.
11. 45-49 yrs.
8. 30-34 yrs.
9. 35-39 yrs.
7. 25-29 yrs.
6. UNDER 25 yrs.
I
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7

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